

APPENDIX A

ENCODER'S MAP OF PATENT CLAIMS

(← + is "further comprises")

1. Encoder (*lossless compression*)
 2. Encoder ← + Quantizer (*lossy compression*)
 3. Encoder ← + Synchronization memory
 4. Encoder ← + Color space converter
 5. N-level direct subband transformer ← $N \times$ Single-level direct subband transformer
 6. N-level direct subband transformer ← 1-D low-pass
 7. N-level direct subband transformer ← 2-D low-pass
 8. Single-level direct subband transformer ← Horizontal & vertical direct filter
 9. Horizontal direct filter ≠ Vertical direct filter
 10. At least one horizontal & vertical direct filter ← Direct non-stationary filter
 11. Single-level direct subband transformer ← Direct filter
 12. Direct filter ← Direct non-stationary filter
 13. Direct non-stationary filter ← Direct non-stationary filter cells
 14. Direct non-stationary filter cells ← Filter cells + Switches
 15. Position of switches for filtering pixels
 16. Position of switches for filtering lines
 17. Direct non-stationary filter ← + Gain multipliers
 18. Filter device ← General non-stationary filter
 19. Multiplier ← Shifting means (*Markush group*)
 20. Filter device ← + N_1 & N_2
 21. N_1 & N_2 ← Shifting means (*Markush group*)
 22. Filter device ← First order device
 23. Multiplier ← Shifting means (*Markush group*)
 24. Shifting right data for two bit positions
 25. Shifting right data for one bit position
 26. Subtraction instead of addition
 27. Filter device ← Second order device
 28. Multiplier ← Shifting means (*Markush group*)
 29. Shifting right data for four bit positions
 30. Subtraction instead of addition

31. Encoding probability estimator \leftarrow Adaptive histogram updating means
32. Adaptive histogram updating means \leftarrow Low-pass filtering probabilities (*Markush group*)
33. Adaptive histogram updating means \leftarrow + Dominant pole adapter
34. Adapter dominantnog pola \leftarrow Dominant pole divider
35. Entropy encoder \leftarrow Multiplier $r \cdot Q(x)$, $Q(x) \in \{U(x), u(x)\}$ (*Markush group*)
36. Multiplier \leftarrow Simplified multiplier + Left shifter for l bit positions
37. Multiplier \leftarrow Left shifter of $Q(x)$ for l bit positions
38. Multiplier \leftarrow Means for zeroing and means for shifting for 1 bit position + adder + left shifter for l bit positions
39. Multiplier \leftarrow Means for zeroing and means for shifting for 2 bit positions + adder + left shifter for l bit positions
40. Entropy encoder \leftarrow Divider $r = \lfloor R/Total \rfloor$
41. Divider \leftarrow Right shifter for $w_3 = \log_2(Total)$ bit position
42. Encoding probability estimator \leftarrow Splitter C into $S + MS + R$
43. MS definition + R definition
44. Entropy encoder \leftarrow Encoder R
45. Encoding probability estimator \leftarrow + Context modeler
46. North-east, north, north-west and west context modeler
47. Encoding probability estimator \leftarrow + \overline{MS} determinator
48. Encoding probability estimator \leftarrow + Maximum mean value MC limiter
49. Entropy encoder \leftarrow Magnitude range encoder $MS + h[MC]$
50. Encoding probability estimator \leftarrow + $h[MC]$ updating
51. Encoding probability estimator \leftarrow + Ternary context TC determinator
52. Encoding probability estimator \leftarrow + Sign inverter using NEG
53. Encoding probability estimator \leftarrow + TC translator into SC using CTX
54. Entropy encoder \leftarrow Sign range encoder + $g[SC]$
55. Encoding probability estimator \leftarrow + $g[SC]$ updating

EQUIVALENT ENCODER CLAIMS

(INDEPENDENT CLAIM OR

DEPENDENT CLAIM / CLAIM FROM WHICH IT DEPENDS ON)

MAP	APPARATUS	METHOD	ARTICLE OF MANUFACTURE	PROPAGATED SIGNAL
1	1	113	225, 449/113	337, 451/113
2/1	2/1	114/113	226/225	338/337
3/1	3/1	115/113	227/225	339/337
4/1	4/1	116/113	228/225	340/337
5/1	5/1	117/113	229/225	341/337
6/5	6/5	118/117	230/229	342/341
7/5	7/5	119/117	231/229	343/341
8/1	8/1	120/113	232/225	344/337
9/8	9/8	121/120	233/232	345/344
10/8	10/8	122/120	234/232	346/344
11/1	11/1	123/113	235/225	347/337
12/11	12/11	124/123	236/235	348/347
13/12	13/12	125/124	237/236	349/348
14/13	14/13	126/125	238/237	350/349
15/14	15/14	127/126	239/238	351/350
16/14	16/14	128/126	240/238	352/350
17/14	17/14	129/126	241/238	353/350
18/14	18/14	130/126	242/238	354/350
19/18	19/18	131/130	243/242	355/354
20/18	20/18	132/130	244/242	356/354
21/20	21/20	133/132	245/244	357/356
22/14	22/14	134/126	246/238	358/350
23/22	23/22	135/134	247/246	359/358
24/23	24/23	136/135	248/247	360/359
25/23	25/23	137/135	249/247	361/359
26/25	26/25	138/137	250/249	362/361
27/14	27/14	139/126	251/238	363/350
28/27	28/27	140/139	252/251	364/363
29/28	29/28	141/140	253/252	365/364
30/29	30/29	142/141	254/253	366/365
31/1	31/1	143/113	255/225	367/337
32/31	32/31	144/143	256/255	368/367
33/32	33/32	145/144	257/256	369/368
34/33	34/33	146/145	258/257	370/369
35/1	35/1	147/113	259/225	371/337
36/35	36/35	148/147	260/259	372/371
37/35	37/35	149/147	261/259	373/371

38/35	38/35	150/147	262/259	374/371
39/35	39/35	151/147	263/259	375/371
40/1	40/1	152/113	264/225	376/337
41/40	41/40	153/152	265/264	377/376
42/1	42/1	154/113	266/225	378/337
43/42	43/42	155/154	267/266	379/378
44/42	44/42	156/154	268/266	380/378
45/42	45/42	157/154	269/266	381/378
46/45	46/45	158/157	270/269	382/381
47/45	47/45	159/157	271/269	383/381
48/47	48/47	160/159	272/271	384/383
49/48	49/48	161/160	273/272	385/384
50/48	50/48	162/160	274/272	386/384
51/45	51/45	163/157	275/269	387/381
52/51	52/51	164/163	276/275	388/387
53/51	53/51	165/163	277/275	389/387
54/53	54/53	166/165	278/277	390/389
55/53	55/53	167/165	279/277	391/389

DECODER'S MAP OF PATENT CLAIMS

($\leftarrow +$ is "further comprises")

1. Decoder (*lossless decompression*)
 2. Decoder $\leftarrow +$ Dequantizer (*lossy decompression*)
 3. Decoder $\leftarrow +$ Synchronization memory
 4. Decoder $\leftarrow +$ Color space converter
 5. N-level inverse subband transformer $\leftarrow N \times$ Single-level inverse subband transformer
 6. N-level inverse subband transformer \leftarrow 1-D low-pass
 7. N-level inverse subband transformer \leftarrow 2-D low-pass
 8. Single-level inverse subband transformer \leftarrow Horizontal & vertical inverse filter
 9. Horizontal inverse filter \neq Vertical inverse filter
 10. At least one horizontal & vertical inverse filter \leftarrow Inverse non-stationary filter
 11. Single-level inverse subband transformer \leftarrow Inverse filter
 12. Inverse filter \leftarrow Inverse non-stationary filter
 13. Inverse non-stationary filter \leftarrow Inverse non-stationary filter cells
 14. Inverse non-stationary filter cells \leftarrow Filter cells + Switches
 15. Position of switches for filtering pixels
 16. Position of switches for filtering lines
 17. Inverse non-stationary filter $\leftarrow +$ Gain multipliers
 18. Filter device \leftarrow General non-stationary filter
 19. Multiplier \leftarrow Shifting means (*Markush group*)
 20. Filter device $\leftarrow + N_1$ & N_2
 21. N_1 & $N_2 \leftarrow$ Shifting means (*Markush group*)
 22. Filter device \leftarrow First order device
 23. Multiplier \leftarrow Shifting means (*Markush group*)
 24. Shifting right data for one bit position
 25. Shifting right data for two bit positions
 26. Subtraction instead of addition
 27. Filter device \leftarrow Second order device
 28. Multiplier \leftarrow Shifting means (*Markush group*)
 29. Shifting right data for four bit positions
 30. Subtraction instead of addition

31. Decoding probability estimator \leftarrow Adaptive histogram updating means
32. Adaptive histogram updating means \leftarrow Low-pass filtering probabilities (*Markush group*)
33. Adaptive histogram updating means \leftarrow + Dominant pole adapter
34. Adapter dominantnog pola \leftarrow Dominant pole divider
35. Entropy decoder \leftarrow Multiplier $r \cdot Q(x)$, $Q(x) \in \{U(x), u(x)\}$ (*Markush group*)
36. Multiplier \leftarrow Simplified multiplier + Left shifter for l bit positions
37. Multiplier \leftarrow Left shifter of $Q(x)$ for l bit positions
38. Multiplier \leftarrow Means for zeroing and means for shifting for one bit position + adder + left shifter for l bit positions
39. Multiplier \leftarrow Means for zeroing and means for shifting for two bit positions + adder + left shifter for l bit positions
40. Entropy decoder \leftarrow Divider $r = \lfloor R/Total \rfloor$
41. Divider \leftarrow Right shifter for $w_3 = \log_2(Total)$ bit position
42. Entropy decoder \leftarrow Divider $\lfloor B/r \rfloor$
43. Divider \leftarrow Simplified divider + right shifter for l bit positions
44. Divider \leftarrow Multiplier with predefined number + right shifter for l plus predefined number of bit positions
45. Decoding probability estimator \leftarrow Builder C from $S + MS + R$
46. Entropy decoder \leftarrow Decoder R MS definition + R definition
47. Decoding probability estimator \leftarrow + context modeler
48. North-east, north, north-west and west context modeler
49. Decoding probability estimator \leftarrow + Mean value \overline{MS} determinator
50. Decoding probability estimator \leftarrow + Maximum mean \overline{MS} limiter
51. Entropy decoder \leftarrow Magnitude range decoder $MS + h[MC]$
52. Decoding probability estimator \leftarrow + $h[MC]$ updating
53. Decoding probability estimator \leftarrow + Ternary context TC determinator
54. Decoding probability estimator \leftarrow + TC translator into SC using CTX
55. Entropy decoder \leftarrow Sign range decoder + $g[SC]$
56. Decoding probability estimator \leftarrow + $g[SC]$ updating
57. Decoding probability estimator \leftarrow + Sign inverter using NEG

EQUIVALENT DECODER CLAIMS**(INDEPENDENT CLAIM OR****DEPENDENT CLAIM / CLAIM FROM WHICH IT DEPENDS ON)**

MAP	APPARATUS	METHOD	ARTICLE OF MANUFACTURE	PROPAGATED SIGNAL
1	56	168	280, 450/168	392, 452/168
2/1	57/56	169/168	281/280	393/392
3/1	58/56	170/168	282/280	394/392
4/1	59/56	171/168	283/280	395/392
5/1	60/56	172/168	284/280	396/392
6/5	61/60	173/172	285/284	397/396
7/5	62/60	174/172	286/284	398/396
8/1	63/56	175/168	287/280	399/392
9/8	64/63	176/175	288/287	400/399
10/8	65/63	177/175	289/287	401/399
11/1	66/56	178/168	290/280	402/392
12/11	67/66	179/178	291/290	403/402
13/12	68/67	180/179	292/291	404/403
14/13	69/68	181/180	293/292	405/404
15/14	70/69	182/181	294/293	406/405
16/14	71/69	183/181	295/293	407/405
17/14	72/69	184/181	296/293	408/405
18/14	73/69	185/181	297/293	409/405
19/18	74/73	186/185	298/297	410/409
20/18	75/73	187/185	299/297	411/409
21/20	76/75	188/187	300/299	412/411
22/14	77/69	189/181	301/293	413/405
23/22	78/77	190/189	302/301	414/413
24/23	79/78	191/190	303/302	415/414
25/23	80/78	192/190	304/302	416/414
26/25	81/80	193/192	305/304	417/416
27/14	82/69	194/181	306/293	418/405
28/27	83/82	195/194	307/306	419/418
29/28	84/83	196/195	308/307	420/419
30/29	85/84	197/196	309/308	421/420
31/1	86/56	198/168	310/280	422/392
32/31	87/86	199/198	311/310	423/422
33/32	88/87	200/199	312/311	424/423
34/33	89/88	201/200	313/312	425/424
35/1	90/56	202/168	314/280	426/392
36/35	91/90	203/202	315/314	427/426
37/35	92/90	204/202	316/314	428/426

38/35	93/90	205/202	317/314	429/426
39/35	94/90	206/202	318/314	430/426
40/1	95/56	207/168	319/280	431/392
41/40	96/95	208/207	320/319	432/431
42/1	97/56	209/168	321/280	433/392
43/42	98/97	210/209	322/321	434/433
44/42	99/97	211/209	323/321	435/433
45/1	100/56	212/168	324/280	436/392
46/45	101/100	213/212	325/324	437/436
47/45	102/100	214/212	326/324	438/436
48/47	103/102	215/214	327/326	439/438
49/47	104/102	216/214	328/326	440/438
50/49	105/104	217/216	329/328	441/440
51/50	106/105	218/217	330/329	442/441
52/51	107/106	219/218	331/330	443/442
53/47	108/102	220/214	332/326	444/438
54/53	109/108	221/220	333/332	445/444
55/54	110/109	222/221	334/333	446/445
56/55	111/110	223/222	335/334	447/446
57/55	112/110	224/222	336/334	448/446